DRAFT RULE 322 – AUGUST 3,2000
For Public Workshop on 8/17/00.
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REGULATION III - CONTROL OF AIR CONTAMINANTS

NEW RULE 322

~~FUEL BURNING EQUIPMENT~~ POWER PLANT OPERATIONS

INDEX

SECTION 100 - GENERAL

101 PURPOSE
102 APPLICABILITY
103 EXEMPTIONS

SECTION 200 - DEFINITIONS

201 ANNUAL CAPACITY FACTOR
202 BOILER
203 COGENERATION STEAM GENERATING UNIT
204 COMBINED CYCLE GAS TURBINE
205 COOLING TOWERS
20~~5~~6 DISTILLATE OIL
20~~6~~7 ELECTRIC UTILITY STEAM GENERATING UNIT
20~~7~~8 EMISSION CONTROL SYSTEM
20~~8~~9 FOSSIL FUEL
210~~9~~ FOSSIL - FUEL - FIRED STEAM GENERATOR
2110 HEAT INPUT
~~211 HEAT RELEASE RATE~~
212 HIGH EFFICIENCY DRIFT ELIMINATORS
213~~2~~ LOW SULFUR OIL
214 NOX
215~~4~~ OIL
216~~4~~ PARTICULATE MATTER
217~~5~~ PARTICULATE MATTER EMISSIONS

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218 RESIDUAL OIL

219 STEAM GENERATING UNIT

SECTION 300 - STANDARDS

301 LIMITATIONS – PARTICULATE MATTER

302 LIMITATIONS – SULFUR IN FUEL

303 LIMITATIONS – NITROGEN OXIDES

304 LIMITATIONS – CARBON MONOXIDE

305~~4~~ REQUIREMENTS FOR AIR POLLUTION CONTROL EQUIPMENT AND ECS MONITORING EQUIPMENT

SECTION 400 - ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE - O&M PLAN

SECTION 500 - MONITORING AND RECORDS

501 PROVIDING AND MAINTAINING RECORDS

502 RECORD KEEPING AND REPORTING

503 RECORDS RETENTION

504 TEST METHODS

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MARICOPA COUNTY
AIR POLLUTION CONTROL REGULATIONS

REGULATION III - CONTROL OF AIR CONTAMINANTS

RULE 322

~~FUEL BURNING EQUIPMENT~~
POWER PLANT OPERATIONS

SECTION 100 - GENERAL

101 PURPOSE: To limit the discharge of certain pollutants into the atmosphere from fuel burning equipment and cooling towers associated with power plant operations by establishing emission rates based upon heat input ~~and~~ or type of fuel usage.

102 APPLICABILITY: This rule applies to any of the following types of fuel burning equipment and associated cooling towers:

102.1 Each fossil-fuel-fired generator or boiler used to generate electric power that has a heat input of equal to or more than 250 million (MM) Btu /hour (73 megawatts).

102.2 Each electric utility steam generating unit or electric utility combined cycle gas turbine capable of combusting more than 100 million (MM) Btu/hour (29 MW) heat input of fossil fuel ~~either alone or in combination with any other fuel.~~

~~**102.3** Each industrial-commercial-institutional steam generating unit that has a heat input capacity from fuels combusted in the steam generating unit of greater than 100 MM Btu/hour.~~

~~**102.4** Each small industrial-commercial-institutional steam generating unit that has a heat input capacity of less than 100 MM Btu/hour but more than 10 MM Btu/hour.~~

~~103~~**103 EXEMPTIONS**~~:~~ Cooling towers shall comply with Subsection 301.3 of the standards section. No other standards in Section 300 shall apply to cooling towers in this rule. ~~This rule shall not apply to any fuel burning equipment from a source that is subject to Rule 313 or Rule 317. Section 303 shall not apply to industrial-commercial-institutional steam generating units that have a heat input capacity of less than 100 MM Btu/hour.~~

SECTION 200 - DEFINITIONS: For the purpose of this rule, the following definitions shall apply:

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201 ANNUAL CAPACITY FACTOR –The ratio between the actual heat input to a steam generating unit from an individual fuel or combination of fuels during a period of 12 consecutive calendar months and the potential heat input to the steam generating unit from all fuels had the steam each a separate source (such as stationary gas turbine, internal combustion engine, or kiln) provides exhaust gas to a steam generating unit.

202 BOILER – Any external combustion equipment fired with liquid and/or gaseous fuel, which is primarily used to produce steam or hot water ~~that is expanded in a turbine generator~~ used for electric power generation.

203 COGENERATION STEAM GENERATING UNIT – a steam generating unit that simultaneously produces both electrical (or mechanical) and thermal energy from the same primary energy source.

204 COMBINED CYCLE GAS TURBINE – a stationary turbine combustion system where heat from the turbine exhaust gases is recovered by a steam generating unit.

205 COOLING TOWERS –open water recirculating devices that use fans or natural draft to draw or force air through the device to cool water by evaporation and direct contact.

206~~5~~ DISTILLATE OIL – fuel oil that complies with the specifications for fuel oil numbers 1 or 2 **,** as defined by the American Society for Testing and Materials in ASTM D39-78, " Standard Specification for Fuel Oils."

207~~6~~ ELECTRIC UTILITY STEAM GENERATING UNIT – Any steam electric generating unit that is constructed for the purpose of supplying more than one-third of its potential electric output capacity and more than 25 ~~MW~~ megawatts electric output to any utility power distribution system for sale.

208~~7~~ EMISSION CONTROL SYSTEM - A system approved in writing by the Control Officer, designed and operated in accordance with good engineering practice to reduce emissions of particulate matter. Such system consists of an emissions collection subsystem and an emissions processing subsystem.

209~~8~~ FOSSIL FUEL –Naturally occurring carbonaceous substances from the ground such as ~~N~~natural gas, petroleum, coal and any form of solid, liquid or gaseous fuel derived from such material for the purpose of creating ~~useful~~ heat.

210~~9~~ FOSSIL- FUEL- FIRED STEAM GENERATOR – A furnace or boiler used in the process of burning fossil fuel for the purpose of producing steam by heat transfer.

211~~0~~ HEAT INPUT – Heat derived from the combustion of fuel in a steam generating unit and does not include the heat input from preheated combustion air, recirculated flue gases, or exhaust gases from other sources, such as gas turbines, internal combustion engines and kilns.

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211 ~~**HEAT RELEASE RATE** – The steam generating unit design heat input capacity (in MW or Btu/hour) divided by the furnace volume (in cubic meters or cubic feet); the furnace volume is that volume bounded by the front furnace wall where the burner is located, the furnace side waterwall, and extending to the level just below or in front of the first row of convection pass tubes. Release rates may be classified as high or low.~~

~~a. High Release Rate – heat release rate greater than 730,000 J/sec-m3 (70,000 Btu/hour ft3).~~

b. ~~Low Release Rate – heat release rate of 730,000 J/sec-m3 or less (70,000 Btu/hour ft3).~~

212 **HIGH EFFICIENCY DRIFT ELIMINATOR –** device that removes liquid droplets and particulate matter (drift) from cooling tower exhaust air by relying on rapid changes in velocity and direction of air-droplet mixtures by impaction on eliminator passage surfaces.

21~~3~~2 LOW SULFUR OIL – Fuel oil containing less than or equal to 0.05 percent by weight of sulfur.

214 **NOX –** oxides of nitrogen calculated as equivalent nitrogen dioxide

21~~5~~3 OIL – Crude oil or petroleum or a liquid fuel derived from crude oil or petroleum including distillate and residual oil.

21~~6~~4 PARTICULATE MATTER - Any material, except condensed water containing no more than analytical trace amounts of other chemical elements or compounds, which has a nominal aerodynamic diameter smaller than 100 microns (micrometers), and which exists in a finely divided form as a liquid or solid at actual conditions.

2~~15~~7 PARTICULATE MATTER EMISSIONS - Any and all finely divided solid or liquid materials other than condensed water, emitted to the ambient air as measured by applicable state and federal test methods.

21~~6~~8 RESIDUAL OIL - Crude oil, fuel oil numbers 1 and 2 that have a nitrogen content greater than 0.05 weight percent, and all fuel oil numbers 4, 5 and 6, as defined by the American Society of Testing and Materials in ASTM D396-78, Standard Specifications for Fuel Oils.

~~217~~219 STEAM GENERATING UNIT – Any furnace, boiler or other device used for combusting fuel for the purpose of producing steam (including fossil-fuel fired steam generators associated with combined cycle gas turbines; nuclear steam generators are not included).

SECTION 300 - STANDARDS

301 LIMITATIONS - PARTICULATE MATTER: No person shall discharge, cause or allow the discharge of particulate matter emissions, caused by combustion of fuel, from any fuel burning operation in excess of amounts listed in subsections 30~~4~~1.1 through 301.2~~4~~. of this rule.

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301.1 For fossil-fuel fired steam generators or boilers used to generate electric power that have a ~~with~~ heat input of more than 250 million (MM) Btu per hour (73 megawatts) ~~per hour~~, no owner or operator shall cause to be discharged into the atmosphere any gases which:

a. Contain particulate matter in excess of 0.10 lbs. per million Btu heat input derived from fossil fuel ~~or fossil fuel and wood residue.~~

b. Exhibits greater than 20 % opacity ~~except for one six minute period per hour of not more than 27 % opacity.~~

301.2 For electric utility steam generating units or electric utility combined cycle gas turbines ~~that are capable of combusting~~ with heat input of more than ~~250~~100 million Btu per hour (~~73~~ 29 megawatts) ~~heat input~~ of fossil fuel ~~alone or in combination with other fuels~~ in the steam generator, no owner or operator shall cause to be discharged into the atmosphere any gases which:

a. Contains particulate matter in excess of 0.03 lbs. per million Btu heat input derived from fossil fuel

b. Exhibits greater than 20 % opacity

301.3 Each cooling tower associated with applicable units listed in Section 102 shall be equipped with a high efficiency drift eliminator to reduce particulate matter emissions. The high efficiency drift eliminator shall have a drift factor of at least 0.001% and shall not be manufactured out of wood.

~~a. Contains particulate matter in excess of 0.03 lbs. per million Btu heat input derived from fossil fuel or fossil fuel and wood residue.~~

~~b. Exhibits greater than 20 % opacity except for one six minute period per hour of not more than 27% opacity.~~

~~**301.3** For any large industrial commercial institutional steam generating units that have a heat input capacity from oils or a mixture of oils combusted in the steam generating unit of greater than 100 MM Btu/hour, no owner or operator shall cause to be discharged into the atmosphere any gases which:~~

~~a.Contain particulate matter in excess of 0.10 lb./million Btu.~~

~~b. Exhibits greater than 20% opacity except for one six minute period per hour of not more than 27% opacity.~~

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~~301.4 For small industrial-commercial-institutional steam generating units that have a maximum design heat capacity of 100 MM Btu per hour or less, but greater than or equal to 10MM Btu per hour, no owner or operator shall cause to be discharged into the atmosphere any gases which:~~

~~a. Contain particulate matter in excess of 0.10 lb/MM Btu.~~

~~b. Exhibits greater than 20% opacity except for one six-minute period per hour of not more than 27% opacity.~~

302 LIMITATIONS – SULFUR IN FUEL: ~~All fossil-fuel-fired steam generators, combined cycle gas turbines electric utility steam generating units steam generators and boilers that are applicable units in Section 502~~ An owner or operator of any applicable fuel burning equipment unit listed in Section 102 used to generate electric power with a resulting discharge of sulfur dioxide in the facility's effluent gases shall use only low sulfur oil with the following exceptions:

302.1 Existing supplies in storage of any liquid fuel or any used oil with sulfur content ~~higher~~ greater than 0.05 % by weight of sulfur may be used by the owner or operator until (insert 1.5 years after adoption of rule).

302.2 Any amounts of existing liquid fuel or used oil with a sulfur content of greater than 0.05% by weight of sulfur that will be used by the owner or operator , shall be reported to the Control Officer along with the dates of usage.

~~An owner or operator shall report to the Control Officer existing liquid fuel inventory of sulfur than 0.05% by weight of sulfur.~~

303 LIMITATIONS – NITROGEN OXIDES: No owner or operator of any applicable fuel burning unit that is listed in Section 102 which commenced construction after May 30,1972 ~~Subsections 303.1 through 303.5~~ that ~~produces~~ generates electric power shall cause to be discharged into the atmosphere any gases with nitrogen oxides, expressed as NO2 in excess of the following limits:

~~303.1 0.20 lb per MM Btu derived from gaseous fossil fuel in fossil fuel fired steam generating units and electric utility steam generating plants.~~

~~303.2 0.30 lb per MM Btu derived from liquid fossil fuel in fossil fuel fired steam generating units and electric utility steam generating plants.~~

~~303.3 0.70 lb per MM Btu derived from solid fossil fuel in fossil fuel fired steam generating units.~~

~~303.4 0.60 lb. per MM Btu derived from solid fossil fuel in electric utility steam generating units.~~

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~~303.5 For Industrial Commercial Institutional Steam Generating Units that have a heat input capacity from fuels combusted in the steam generating unit of greater than 100 MM Btu, the following emission units for NO2 shall apply:~~

~~a.For natural gas and distillate oil with a low heat release rate, the NO2 emission limits shall be 0.10 lb. per MM Btu .~~

~~b.For natural gas and distillate oil with a high release rate, the NO2 emission limits shall be 0.20 lb. per MM Btu.~~

~~c.For residual oil with a low release rate, the NO2 emission limits shall be 0.30 lb. per MM Btu.~~

~~d.~~a. ~~For residual oil with a high release rate, the NO2 emission limits shall be 0.40 lbs. per MM Btu.~~

~~e.For a duct burner used in a combined cycle system that combusts both natural gas and distillate oil, the NO2 emission limits shall be 0.20 lbs. per MM Btu.~~

~~f.~~b. ~~For a duct burner used in a combined cycle system that combusts only residual oil,the NO2 emission limits shall be 0.40 lbs. per MM Btu.~~

TABLE 1 – NOX LIMITS

FUEL TYPE	FOSSIL FUEL FIRED STEAM GENERATOR	ELECTRIC UTILITY STEAM GENERATOR
GASEOUS	0.20 lb/ MM	0.20 lb/MM
LIQUID	0.30 lb/MM	0.30 lb/MM

303.6 Compliance with NO~~2~~X emission limits shall be based upon a ~~30 day~~ maximum three hour average ~~-~~rolling average.

304 CARBON MONOXIDE LIMITATIONS : No owner or operator of any applicable fuel burning equipment listed in Section 102 of this rule shall exceed 1000 ppmv of carbon monoxide, dry at 3% oxygen, based on a clock hour average.

~~304~~305 REQUIREMENTS FOR AIR POLLUTION CONTROL EQUIPMENT AND ECS MONITORING EQUIPMENT:

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305~~4~~.1 Emission Control System Required: For affected operations which may exceed any of the applicable standards set forth in Sections 30~~4~~10 of this rule, an owner or operator may comply by installing and operating an emission control system.

304~~5~~.2 Operation and Maintenance (O&M) Plan Required For ECS:

a. An owner or operator shall provide and maintain (an) O&M Plan for any ECS, any other emission processing equipment, and any ECS monitoring devices that are used pursuant to this rule or to an air pollution permit.

b. The owner or operator shall submit to the Control Officer for approval the O&M Plans of each ECS and each ECS monitoring device that is used pursuant to this rule.

c. The owner or operator shall comply with all of the identified actions and schedules provided in each O&M Plan.

305~~4~~.3 Providing and Maintaining ECS Monitoring Devices: No person required to use an approved emission control system to control particulate emissions pursuant to this rule shall do so without first providing properly installing, operating and maintaining in calibration and in good working order, devices for indicating temperatures, pressures, transfer rates, rates of flow, or other operating conditions necessary to determine if air pollution control equipment is functioning properly and is properly maintained as described in an approved O&M Plan.

305.4 Continuous Emission Monitoring Systems: (to be addressed in the next draft)

~~**304.4 Continuous Emission Monitoring Systems:** The owner or operator of a facility subject to this rule, shall install, calibrate, maintain and operate a continuous monitoring system and record the output of the system, for measuring the opacity of emissions discharged to the atmosphere, for measuring the amount of NO2 discharged to the atmosphere or the owner or operator may request the Control Officer to approve an alternative monitoring device.~~

SECTION 400 - ADMINISTRATIVE REQUIREMENTS

401 COMPLIANCE SCHEDULE

401.1 Operation and Maintenance (O&M) Plan: Any person employing an approved emission control system on the effective date of this rule shall by (insert 6 mos. after rule is adopted) file an O&M Plan with the Control Officer in accordance with Subsection 305.2~~6~~ of this rule.

401.2 Equipment or ECS Modifications: Any person required to modify their equipment, system or ECS by either reconstructing or adding on new equipment for compliance with this rule shall by (insert 6 months after rule is adopted) file a schedule for the

modification with the Control Officer. The plan shall show how the ECS is to be used to achieve full compliance and shall specify dates for completing increments of progress. Any and all ECS used to achieve such compliance shall be in operation by 18 months after (insert date of adoption of rule) .

401.3 Verification of Low Sulfur Oil: Fuel receipts from the fuel supplier which certify that the oil used to generate electric power used in this rule is low sulfur oil shall be submitted to the Control Officer if proof of sulfur content of the oil is requested by the Control Officer.

SECTION 500 - MONITORING AND RECORDS

501 RECORDKEEPING AND REPORTING: Any person subject to this rule shall comply with the requirements set forth in this section. Any records and data required by this section shall be kept on site at all times in a consistent and complete manner and be made available without delay to the Control Officer or his designee upon request. ~~The type of~~ Daily ~~r~~records ~~shall vary dependent upon the~~ shall consist of the following information:

~~501.1~~501.1 Fossil-Fuel Fired Steam Generators: Type of fuel used, amount of fuel used and hours of operation, amount of sulfur in the fuel, ~~hours of operation, initial performance test data for SO2, NO2 and PM emissions, test data from the performance evaluation of the continuous monitors,~~ opacity readings, fuel receipts indicating the sulfur content of the fuel.

~~501.2~~501.2 Electric Utility Steam Generating Units: Type of fuel used, amount of fuel used and hours of operation, amount of sulfur in the fuel, ~~hours of operation, initial performance test data for SO2, NO2 and PM emissions, test data from the performance evaluation of the continuous monitors,average emission rates for each successive boiler operating day for NO2~~, opacity readings, fuel receipts indicating the sulfur content of the fuel.

~~501.3 Industrial-Commercial-Institutional Steam Generating Units that have a heat capacity from fuels combusted in the steam generating unit of greater than 100 MM Btu/hour: Type of fuel used, amount of fuel used, hours of operation, annual capacity factor at which the owner or operator anticipates operating the facility based on all fuels fired and each individual fuel fired, initial performance test data for SO2, NO2 and PM emissions, test data from the performance evaluation of the continuous monitors, opacity readings, fuel receipts of low sulfur oil~~

~~501.4 Industrial- Commercial- Institutional Steam Generating Units that have a heat capacity from fuels combusted in the steam generating unit of greater than 10 MM Btu /hour but less than 100 MM Btu/hour : Type of fuel used, amount of fuel used, hours of operation,~~

502 RECORD RETENTION: Copies of reports, logs and supporting documentation required by the Control Officer shall be retained at least 5 years. Records and information required by this rule shall also be retained for at least 5 years.

503 TEST METHODS: .The EPA test methods as they exist in the Code of Federal Regulations (CFR) (July 1, 1999), as listed below, are adopted by reference. These adoptions by reference include no future editions or amendments. Copies of test methods referenced in this Section are available at the Maricopa Environmental Services Department, 1001 N. Central Avenue, Phoenix, AZ. 85004-1942. The ASTM method (1998) and the Standard Method listed below (1995) are also adopted by reference. When more than one test method is permitted for a determination, an exceedence of the limits established in this rule determined by any of the applicable test methods constitutes a violation of this rule.

503.1 EPA Reference Methods 1("Sample and Velocity Traverses for Stationary Sources"), 1a ("Sample and Velocity Traverses for Stationary Sources with Small Stacks and Ducts") (40 CFR 60, Appendix A).

503.2 EPA Reference Methods 2 ("Determination of Stack Gas Velocity and Volumetric Flow Rate"), 2a ("Direct Measurement of Gas Volume Through Pipes and Small Ducts"), 2c ("Determination of Stack Gas Velocity and Volumetric Flow Rate in Small Stacks or Ducts") and 2d ("Measurement of Gas Volumetric Flow Rates in Small Pipes and Ducts") (40 CFR 60, Appendix A).

503.3 EPA Reference Method 3 ("Gas Analysis for the Determination of Dry Molecular Weight") (40 CFR 60, Appendix A).

503.4 EPA Reference Method 4 ("Determination of Moisture Content in Stack Gases") (40 CFR 60, Appendix A).

503.5 EPA Reference Method 5 (" Determination of Particulate Emissions from Stationary Sources") (40 CFR 60,Appendix A) and possibly, if requested by the Control Officer, EPA Reference Method 202 (Determination of Condensable Particulate Emissions from Stationary Sources") (40 CFR 51, Appendix M) .

503.6 EPA Reference Method 7 ("Determination of Nitrogen Oxide Emissions from Stationary Sources") (40 CFR 60, Appendix A)

503.7 EPA Reference Method 9 ("Visual Determination of the Opacity of Emissions from Stationary Sources") (40 CFR 60, Appendix A).

503.8 ~~**503.8** ASTM~~ American Society of Testing Materials, ASTM Method # D2622-98, ("Standard Test Method for Sulfur in Petroleum Products by Wavelength Dispersive X-Ray Fluorescence Spectrometry"),1998.

503.9 American Society of Testing Materials, ASTM Method #1266-98, ("Standard Test Method for Sulfur in Petroleum Products - Lamp Method"), 1998.

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